

AMENDMENTS

Please amend the claims as follows:

1. (previously presented) A method of determining a temperature of an ultrasound transducer, the method comprising:

- (a) receiving signals from at least one transduction element of the ultrasound transducer;
- (b) determining a temperature-dependent property of the ultrasound transducer from the received signals; and
- (c) determining a temperature state of the ultrasound transducer in response to determining the temperature-dependent property, wherein determining the temperature-dependent property comprises determining an acoustic property of a lens or window of the ultrasound transducer.

2. (currently amended) The method of Claim 1 further comprising:

- (d) ~~connecting the ultrasound transducer to an ultrasound imaging system, the connection connecting the at least one transduction element to a receive beamformer channel;~~

wherein (b) comprises determining the temperature-dependent property with components in the an ultrasound imaging system, the ultrasound imaging system including the receive beamformer channel, the received signals being received on the connection of the at least one transduction element to the receive beamformer channel, the connection ~~connections~~ also used for acoustic imaging signals.

3-8. (cancelled)

9. (previously presented) The method of Claim 1 further comprising:

- (d) transmitting acoustic energy with the ultrasound transducer in response to a transmit beamformer;

wherein receiving the signals comprises receiving echo signals responsive to transmitting the acoustic energy and associated with lens or window depths with a receive beamformer.

10. (currently amended) The method of Claim 1 wherein (b) comprises:

(b1) determining, for each of a plurality of elements including the at least one transduction element, a time-of-arrival of acoustic energy; and

(b2) estimating a the lens or window acoustic velocity from the times-of-arrival, the acoustic velocity representing the temperature dependent property.

11. (currently amended) The method of Claim 1 wherein (b) comprises:

(b1) determining, for each of a plurality of elements including the at least one transduction element, a time-of-arrival of acoustic energy; and

(b2) calculating a difference for each time of arrival from a time-of-arrival profile for a known temperature, the difference representing the temperature dependent property.

12. (currently amended) The method of Claim 1 & wherein (b) comprises determining an amount of attenuation of the lens or window, the amount of attenuation representing the temperature dependent property.

13. (original) The method of Claim 1 wherein (c) comprises determining a state above a preset limit.

14. (currently amended) A method of determining a temperature of an ultrasound transducer, the method comprising:

(a) connecting elements of the ultrasound transducer to an ultrasound imaging system; and

(b) determining a temperature of the ultrasound transducer with components in the ultrasound imaging system, the determining being from signals on connections also used for

acoustic imaging signals, the connections corresponding to the connecting of the elements to the ultrasound imaging system.

15-22. (cancelled)

23. (previously presented) The method of Claim 1 wherein determining the temperature state comprises determining a temperature with components of the ultrasound transducer that are also used for ultrasound imaging.

24. (original) The method of Claim 1 wherein (c) is performed without added devices in the transducer for temperature measurement.

25. (currently amended) The method of Claim 1 wherein (b) comprises measuring a frequency content of the received signals, the frequency content representing the temperature-dependent property, wherein (c) comprises determining the temperature state as a function of the frequency content of the received signals.

26. (previously presented) The method of Claim 25 further comprises:

(d) transmitting a waveform with a frequency that varies as a function of time; wherein (b) comprises measuring a decay in response to (d).

27. (currently amended) A method of determining a temperature of an ultrasound transducer, the method comprising:

(a) receiving signals from at least one transduction element of the ultrasound transducer;

(b) determining a temperature-dependent property of the ultrasound transducer from the received signals;

(c) determining a temperature state of the ultrasound transducer in response to determining the temperature-dependent property; and

(d) performing (b) for a plurality of locations along a lens or window of the transducer;

wherein (c) comprises determining the temperature state as a function of the measurements at the plurality of locations.

28. (currently amended) A method of determining a temperature of an ultrasound transducer, the method comprising:

(a) receiving signals from at least one transduction element of the ultrasound transducer;

(b) determining a temperature-dependent property of the ultrasound transducer from the received signals; and

(c) determining a temperature state of the ultrasound transducer in response to determining the temperature-dependent property;

further comprising transmitting acoustic energy multiple times, wherein receiving the signals comprises receiving the signals in response to the transmitting acoustic energy multiple times, and wherein determining the temperature-dependent property comprises determining from a combination of received signals responsive to the transmitting multiple times.

29. (currently amended) A method of determining a temperature of an ultrasound transducer, the method comprising:

(a) receiving signals from at least one transduction element of the ultrasound transducer;

(b) determining a temperature-dependent property of the ultrasound transducer from the received signals; and

(c) determining a temperature state of the ultrasound transducer in response to determining the temperature-dependent property;

further comprising transmitting acoustic energy multiple times, wherein receiving the signals comprises receiving the signals at different apertures on the ultrasound transducer, the received signals associated responsive to the transmitting acoustic energy multiple times;

further comprising:

(d) shifting at least a first one of the received signals relative at least a second one of the received signals;

wherein determining the temperature-dependent property comprises determining from a combination of at least the shifted first received signal and the second received signal.

30-32. (cancelled)

33. (original) The method of Claim 1 further comprising:

(d) initiating a series of actions depending on the temperature state.

34-40. (cancelled)